

CLAIMS

What is claimed is:

1. A pod cover removing-installing apparatus to remove and install a cover for an opening of a pod, of which the inside is kept extremely clean, by causing the cover to engage a door for an opening of a high cleanliness room, while maintaining high cleanliness of the pod and the room by closely attaching the circumference of the two openings, the pod cover removing-installing apparatus comprising:

a positioning member to determine the position of the cover, a fine adjustment mechanism to finely adjust the position of the positioning member, and a holding mechanism to hold the position of the cover mated with the door the positioning member.

2. The pod cover removing-installing apparatus according to claim 1, wherein the door is provided with a base plate and a position adjusting plate movable in the direction vertical to the plane, the positioning member is provided in the position adjusting plate, the fine adjustment mechanism is provided in the base plate and supports the position adjusting plate movable in the direction vertical to the plane, and the holding mechanism is provided in the base plate and holds the position of the position adjusting plate.

3. The pod cover removing-installing apparatus according to claim 2, having a centering mechanism for returning the position adjusting plate to the center.

4. The pod cover removing-installing apparatus according to claim 2, further comprising a locking member which is provided in the position adjusting plate, rotates around the axis of the position adjusting plate, and engages the cover for locking or unlocking, a lock drive device which is provided on the base plate side to rotate the lock member, and an eccentric transmission mechanism which transmits the rotational power of the lock drive device to the lock member, while allowing a deviation of the base plate and position adjusting plate in the direction vertical to the plane.

5. The pod cover removing-installing apparatus according claim 4, wherein the holding mechanism cancels the holding of the position adjusting plate before the

locking members locks the cover and holds the position adjusting plate after the lock member locks the cover.

6. The pod cover removing-installing apparatus according to claim 4, wherein the lock member cancels the lock in an initial stage of the inserting operation for inserting the cover into the opening of the pod.

7. A pod cover removing-installing apparatus to remove and install a cover for an opening of a pod, of which the inside is kept extremely clean, by causing the cover to engage a door for an opening of a high cleanliness room, while maintaining high cleanliness of the pod and the room by closely attaching the circumference of the two openings, the pod cover removing-installing apparatus comprising:

a lock member to lock the cover by engaging the same and a cover securing device to secure the cover to the door by retracting the lock member to the door side.

8. A pod cover removing-installing apparatus to remove and install a cover for an opening of a pod, of which the inside is kept extremely clean, by causing the cover to engage a door for an opening of a high cleanliness room, while maintaining high cleanliness of the pod and the room by closely attaching the circumference of the two openings, the pod cover removing-installing apparatus comprising:

a positioning member to determine the position of the cover by engaging the engaged part of the cover and a position securing device to position and secure the positioning member to the engaged part of the cover by changing the external diameter of the positioning member.

9. The pod cover removing-installing apparatus according to claim 8, wherein the position securing device is provided in the circumference of the positioning member and has a stretch member capable of stretching according to an increase or decrease in the internal pressure.

10. The pod cover removing-installing apparatus according to claim 8, wherein the position securing device is formed in the positioning member and has a broken part to change the diameter thereof by a mechanical force.

11. The pod cover removing-installing apparatus according to claim 8, wherein the positioning member has an outer casing with a tapered end, an inner

casing installed freely movably in the axial direction of the outer casing, having a taper with the same angle as the taper of the outer casing at its end, and arranged so that the two tapers become continuous when protruding, and a pushing device to push the inner casing in the protruding direction.

12. The pod cover removing-installing apparatus according to claim 1, comprising a linking posture corrective device which corrects the linking posture of the pod, a pod table having the pod installed thereon to carry the positioning member to the linking position, a securing device to secure the pod on the pod table, containing a V-section groove provided on the bottom of the pod and a linking pin provided on the pod table to engage the V-section groove, wherein the linking posture corrective device is provided in the range in which the linking pin and the V-section groove can come into contact with each other and constitutes a fixed plane almost vertical to the moving direction of the pod table.

13. The pod cover removing-installing apparatus according to claim 1, comprising a linking posture corrective device which corrects the linking posture of the pod, wherein the linking posture corrective device comprises a pressing member provided on the periphery of the door to press the top and/or the side of the cover of the pod and capable of freely moving in the moving direction of the table or in the vertical direction thereto within a prescribed movable range.

14. The pod cover removing-installing apparatus according to claim 7, comprising a linking posture corrective device which corrects the linking posture of the pod, a pod table having the pod installed thereon to carry the positioning member to the linking position, a securing device to secure the pod on the pod table, containing a V-section groove provided on the bottom of the pod and a linking pin provided on the pod table to engage the V-section groove, wherein the linking posture corrective device is provided in the range in which the linking pin and the V-section groove can come into contact with each other and constitutes a fixed plane almost vertical to the moving direction of the pod table.

15. The pod cover removing-installing apparatus according to claim 8, comprising a linking posture corrective device which corrects the linking posture of the pod, a pod table having the pod installed thereon to carry the positioning member to the linking position, a securing device to secure the pod on the pod table, containing a

V-section groove provided on the bottom of the pod and a linking pin provided on the pod table to engage the V-section groove, wherein the linking posture corrective device is provided in the range in which the linking pin and the V-section groove can come into contact with each other and constitutes a fixed plane almost vertical to the moving direction of the pod table.

16. The pod cover removing-installing apparatus according to claim 7, comprising a linking posture corrective device which corrects the linking posture of the pod, wherein the linking posture corrective device comprises a pressing member provided on the periphery of the door to press the top and/or the side of the cover of the pod and capable of freely moving in the moving direction of the table or in the vertical direction thereto within a prescribed movable range.

17. The pod cover removing-installing apparatus according to claim 8, comprising a linking posture corrective device which corrects the linking posture of the pod, wherein the linking posture corrective device comprises a pressing member provided on the periphery of the door to press the top and/or the side of the cover of the pod and capable of freely moving in the moving direction of the table or in the vertical direction thereto within a prescribed movable range.

18. The pod cover removing-installing apparatus according claim 2, wherein the holding mechanism cancels the holding of the position adjusting plate before the locking members locks the cover and holds the position adjusting plate after the lock member locks the cover.

19. The pod cover removing-installing apparatus according to claim 1, wherein the positioning member has an outer casing with a tapered end, an inner casing installed freely movably in the axial direction of the outer casing, having a taper with the same angle as the taper of the outer casing at its end, and arranged so that the two tapers become continuous when protruding, and a pushing device to push the inner casing in the protruding direction.

20. The pod cover removing-installing apparatus according to claim 10, wherein the positioning member has an outer casing with a tapered end, an inner casing installed freely movably in the axial direction of the outer casing, having a taper with the same angle as the taper of the outer casing at its end, and arranged so that

the two tapers become continuous when protruding, and a pushing device to push the inner casing in the protruding direction.

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